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Susan Bender and Millie Booth set up an excavation grid at Napaaqtualuit.

(Left) Aminilla Hugo and Deron Smith screen excavated soil to find artifacts they might have missed while digging. Aminilla will find small pieces of stone tools and flakes there amongst the stones.

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# Archeological Investigations in Anaktuvuk Pass: Nunamiut Students Uncover Their Past

by Julie Esdale and Robert Gal

## Introduction

Archeological research in northern Alaskan parks is driven largely by resource management concerns: Where do sites occur? What were people doing there? How large are they? How old are they? Is a site common, or rare, and how should it be treated? Is an important site threatened by erosion? By human visitation? To answer these questions and others, archeologists must investigate remote areas in the brief summer season. The logistic support for these investigations are frequently complicated and usually very expensive. Archeologists recognize, however, that local communities should play a role in archeological research and stewardship within their geographic area of patrimony. Since 1985, as prudence and opportunity allowed, NPS archeologists have included students and young adults for varying lengths of time in their field investigations in all five of the northwest Alaskan parks.

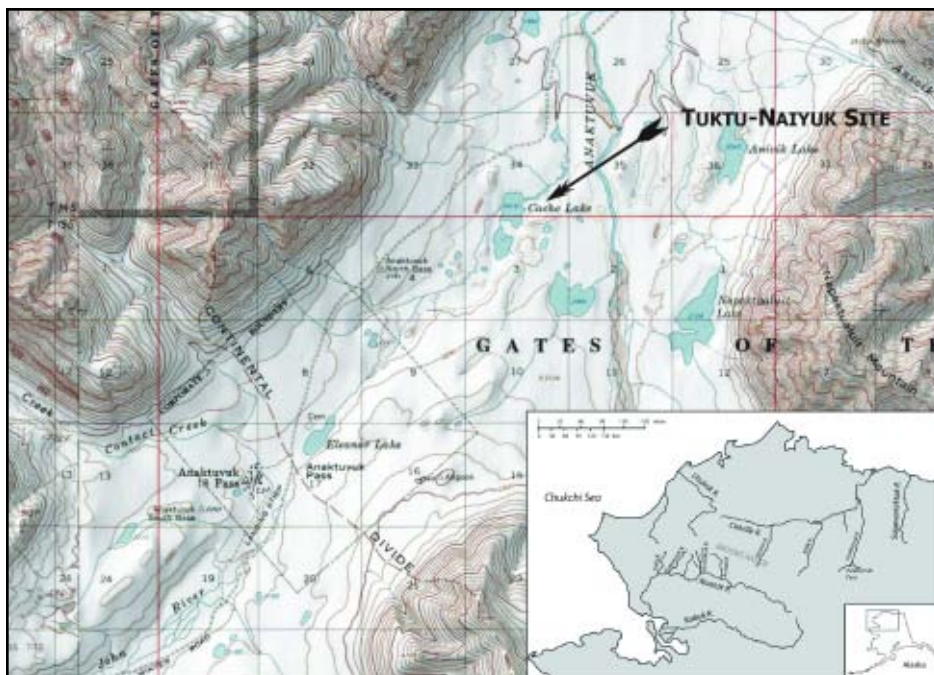
During the summer of 2004, several agencies (Western Arctic National Parklands, Gates of the Arctic National Park and Preserve, National Park Service-Alaska Regional Office, and Brown University) came together in the village of Anaktuvuk Pass to study the prehistoric archeology at the Tuktu-Naiyuk site. The proximity of the site to the village facilitated the full involvement of local students in the scientific process.

The Tuktu-Naiyuk archeological site, located in the Anaktuvuk River valley four miles north of the village of Anaktuvuk

***In one area of the site, Campbell excavated several ancient fire pits and a stone ring that marked the former location of a skin tent...He was able to gather enough charcoal from this feature, named the "Tuktu House", for a radiocarbon date of 6,500 years ago.***

Pass, was originally identified in 1959 by archeologist Jack Campbell with the help of Anaktuvuk Pass residents Thomas Rulland and Robert Paneak (*Campbell 1962a, 1962b*). The landform was well known by the local Nunamiut people, and was likely used as a campsite by caribou hunters for thousands of years. At Tuktu-Naiyuk, Campbell discovered stone weapon points, some with notches at the base for hafting (notched points) and some without (lanceolate points). He also found flat hand-sized cobbles with notches chipped on two sides to be hafted and used as a hammer (notched pebbles), and stones that had long narrow razorblade-like flakes removed, called microblade cores. In one area of the site, Campbell excavated several ancient fire pits and a stone ring that marked the former location of a skin tent (*Campbell 1961, Shinkwin 1964*). He was able to gather enough charcoal from this feature, named the "Tuktu House", for a radiocarbon date of 6,500 years ago.

Because of the artifacts Campbell and



**Map of Brooks Range and Anaktuvuk Pass area showing the location of the Tuktu-Naiyuk archaeological site.**

his crew discovered and the ancient date on the Tuktu house, the Tuktu-Naiyuk site became an important cornerstone for understanding the cultural chronology of interior northern Alaska. This site is always referenced by archeologists researching and writing about the mid-Holocene (circa 4,000 to 7,000 years ago), even though many questions about Tuktu-Naiyuk have remained unanswered, and in the intervening years, new questions about this time period have emerged. In 1998 NPS Cultural Resource Preservation Program funding was secured for two seasons of work to attempt to integrate the findings from the Tuktu-Naiyuk Site and several other sites

from Gates of the Arctic NP&P, from Noatak River sites, and from the Onion Portage Site on the Kobuk River. The first season of work was completed in the summer of 2000 but the reinvestigation of the Tuktu-Naiyuk Site could not be arranged until 2004.

One set of questions concerned the layout of the Tuktu-Naiyuk Site and its occupational history. Landforms such as the broad Tuktu-Naiyuk terrace were reused repeatedly over time. Small, spatially bounded clusters of archeological material on the terrace can be more confidently attributed to the activities of a single human

group than can artifacts diffusely distributed across a landform. One of our goals was to apply precise modern plotting techniques and focus on discrete clusters of artifacts on the terrace to identify the repetitive co-occurrence of forms within the clusters.

Another question was the antiquity of occupations at the site. Although Campbell had dates ranging from 2,500-6,500 years ago, the 6,500 year date is the only one commonly cited by other archeologists. Furthermore, in the 1960s when this work was completed, radiocarbon dating was still in its infancy. Campbell needed a large sample of charcoal to get an age, and so he combined pieces that he found around a wide area. The samples he dated had a greater likelihood of containing charcoal of different ages from different occupations at the site. We can now date just milligrams of charcoal, coming from one twig used in a fire by ancient inhabitants of the site using the AMS technique of radiocarbon dating (accelerator mass spectrometry—a technique that separates carbon isotopes by mass by shooting them through a magnetic field).

The 2004 work at Tuktu-Naiyuk sought to understand the ways this site was used by people in the past and when people had inhabited the site. We also wanted to figure out which stone tools were an important part of the toolkit used by hunter-gatherers in the Brooks Range during what archeologists call the Northern Archaic (roughly 4,000-7,000 years before present) (Anderson 1968). The students involved in the project learned about the environmental challenges earlier occupants of the

Anaktuvuk valley (possibly even their direct ancestors) had to face, and how their hunting techniques, housing, tools and diet changed over time. We learned from the students too, who had a completely different approach to our investigation. Their contributions gave a richer narrative to the past.

## Student Participation

The archeological crew for the 2004 season consisted of National Park Service archeologists from Western Arctic National Parklands and Gates of the Arctic National Park and Preserve, students from University of Alaska at both Fairbanks and Anchorage campuses, Terence Booshu from Point Hope, and several students from the Nunamiut School in Anaktuvuk Pass (Billy Ahgook, Amanilla Hugo, Brandon Rummer, and Diane Sikvayugak). Three students from Noatak Village (Millie Booth, Masaak Penn, and Deron Smith) also spent ten days with us at the site as part of a Shared Beringian Heritage Program archeological mentoring program.

For this project, it was important to use specific modern archeological methods to answer the questions that have arisen since Campbell's excavations in the 1960s.

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Students were involved in all aspects of the archeological process. They first learned to identify the characteristics of flaked stone tools in order to discern naturally broken rocks from those broken by humans. They identified previously undiscovered archeological sites on the Tuktu-Naiyuk terrace by systematically examining the ground surface for tiny flakes (the debris left behind when making chipped stone tools) of glassy stones like chert and obsidian. Areas with archeological materials were marked with pin-flags to show the concentration and abundance of flakes, tools, charcoal and other traces of ancient humans. These clusters were precisely plotted with surveying equipment and used to generate maps. The maps were used to target small scale test excavations that aimed to recover a sample of artifacts and material for radiocarbon dating. The location of Campbell's previous excavations were also plotted to put his collections in spatial context. In the future, the maps can be used to monitor changes or impacts to the site condition.

Clusters of stone tools potentially represent locations at which people once constructed housing, prepared food, or created and repaired tools. Several clusters of archeological material were chosen for excavation based on the presence of: charcoal (which can be used to date a site); burnt flakes and tools; important artifacts such as stone points or hide scraping tools; or exotic raw materials such as obsidian or quartz crystal. Each student was paired with an archeologist to excavate meter-square test units, and was responsible for recording information about sediment

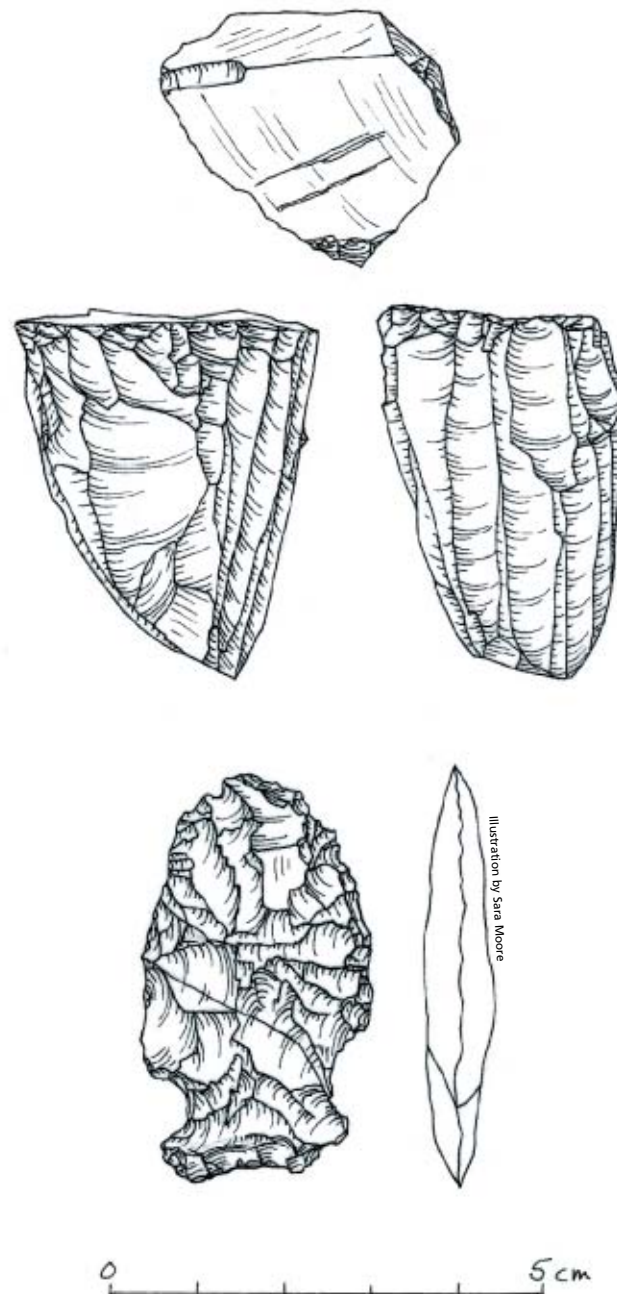


Illustration by Sara Moore



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(Top-Right) Before excavations begin, archeologists identify where the largest concentrations of tools, flakes, and burnt material occur. Each artifact found on the surface is marked with a pin flag and then mapped.

(Bottom-Right) Billie Ahgook and Brandon Rummer excavate a unit at the Napaaqtualuit locality at Tuktu-Naiyuk.

(Left) Microblade cores (upper) and notched projectile points (lower) are artifacts commonly found in the Brooks Range dating to the Northern Archaic period.





**This 1,900 year-old fireplace, or hearth, was covered with charcoal. A small pit containing several caribou bones was found near the northeast corner of the hearth (top right in photo).**

texture, types of stone, any charcoal or other evidence of burning, and most importantly, the three-dimensional location of all flakes and tools (distance north and east of a defined datum point and depth

in the unit). These data were carefully recorded so that the site could be reconstructed and analyzed after the field season.

The students also had a good time narrating their experience, what they saw, and

aspects of the excavation using videography and drawing. Their perceptions of the environment, cultural finds, and methodologies brought a fresh perspective to the research. For example, place-names are an important

part of Nunamiut heritage. The central Brooks Range is dotted with sites named because they were important hunting locations or places where special events occurred. This tradition was honored by the students involved in the project by naming our excavation localities. The Napaaqtualuit excavation area was named by Amanilla and Diane after the mountain looming over the site to the east. The Uyagaluk locality was named by Billy and Brandon for the Nunamiut word for big rock, as there was a large boulder in the middle of the excavation area.

## Excavated Areas

Of the 56 new artifact clusters identified on the Tuktu-Naiyuk terrace we focused on three with the best potential to provide information about past life ways during the Northern Archaic period: L-2, Napaaqtualuit, and Uyagaluk.

The first area, L-2, was a ring of stones that likely held down a tent some time in the past. Excavations produced small, thin, stone knives and a fire place. Charcoal in this fireplace was dated using the radiocarbon method. This showed that people erected and warmed up their tent on this spot slightly over 2,100 years ago.

Several different campsites had been made through time in the Napaaqtualuit excavation area. One cluster of stone tools found was made of quartz crystal and located with charcoal and burnt bone. In total, four scrapers, two notched projectile points, and two flake tools were found at the site made from quartz crystal, a stone rarely found in archeological sites in the

area. Four radiocarbon dates on the charcoal associated with these points cluster around 5,100 years before present.

Twenty-two yards (20 m) to the south was another ancient campsite. The people who stopped here approximately 4,000 years ago crafted knives and projectile points from obsidian. Obsidian is shiny black volcanic glass, ideal for producing sharp edges. Over a dozen notched points were discovered here, most of them broken in use and discarded. A few meters to the west an interesting hearth (fireplace) was found. It was covered with rocks and thick with charcoal. A small pit of caribou bones was discovered next to the hearth. Charcoal from this feature dated to 1,900 years ago. It appears as if some hunters stopped at the site several thousand years after earlier occupations, warmed up and ate a meal.

At the western edge of the Tuktu-Naiyuk terrace we excavated two localities (D-south and Uyagaluk) that had lanceolate projectile points on the surface. D-south was immediately adjacent to one of Campbell's excavations and we wanted to see if we could find charcoal to date the site (Campbell's date of 5,600 years before present was from here). Excavations uncovered lanceolate weapon points and scraping tools made from black and grey chert. Chert is a common type of stone used for tools in the Brooks Range. This rock is found interbedded with limestone in the mountains to the west of Anaktuvuk Pass, and chert is also found in stream cobbles. When broken, the rock is sharp and strong. In this area, it is often the most

common material found at sites (*Giddings 1962, Irving 1951*). We also found charcoal here, but the age was 3,900 years ago, somewhat younger than Campbell's original determination.

Uyagaluk was another cluster of artifacts, just to the north of D-South. Artifacts found here included notched points, scrapers and lanceolate points. There were also a few possible hearths in this area. Hearths at the Tuktu-Naiyuk site are shallow, and recognized by small pieces of charcoal, burnt bone, and reddened soil. We received a date of 1,750 years ago for charcoal in one of these hearths.

### Analysis and Follow-up

After the successful field season, the artifacts, charcoal samples and sediment samples found during excavation went to Fairbanks with one of the authors (Julie Esdale) to be analyzed as part of her doctoral dissertation, but students also had a chance to be involved in the analysis. For a week during October of 2004, during science class at Nunamiut School in Anaktuvuk Pass, high school students learned how stone tools are made, how archeologists analyze artifacts, how they reassemble the spatial data recorded during excavation to reconstruct the site, how radiocarbon dating works, and how findings are reported to the scientific community.

The students watched demonstrations of flint knapping that showed how pieces of obsidian and chert could be broken or flaked to produce tools with sharp edges for cutting, penetrating and scraping animal hides, flesh, and bone. Most of the

stone found at an archeology site is not the tools, but the flakes that come off of the tools during flint knapping. Even when tools are absent from the site, these characteristic artifacts can be analyzed for important information about what types of tools were being made and used, and

what types of manufacturing techniques were utilized by the ancient hunters (*Kuhn 1994*). Nunamiut School students carefully considered several attributes on flakes to decide if they had come off of a cutting tool, a scraping tool, a core, or a notched pebble, for example. They also practiced

Site Local	Date	Sample Material	Excavator
L-2 tent ring	2110 ± 40	Wood charcoal	Young
Naiyuk-1	3042 ± 188	Caribou bone	Campbell
Naiyuk-1	3615 ± 217	Bone fragments	Campbell
Naiyuk-2	2576 ± 157	Wood charcoal	Campbell
Naiyuk-2	3292 ± 445	Charred bone	Campbell
Naiyuk-4	5688 ± 183	Bone fragments	Campbell
D-south (Naiyuk-4)	3940 ± 40	Willow charcoal	Esdale
Naiyuk-5	3440 ± 253	Bone fragments	Campbell
Naiyuk-8	3527 ± 191	Bone fragments	Campbell
Tuktu-1	6510 ± 610	Charred bone	Campbell
Napaaq tent ring	60 ± 30	Willow charcoal	Esdale
Uyagaluk	1750 ± 40	Willow charcoal	Esdale
Napaaq quartz point area	5070 ± 40	Alder charcoal	Esdale
Napaaq quartz point area	5109 ± 41	Alder charcoal	Esdale
Napaaq quartz point area	5109 ± 42	Birch charcoal	Esdale
Napaaq quartz point area	5126 ± 42	Birch charcoal	Esdale
Napaaq quartz point area	5255 ± 59	Birch charcoal	Esdale
Napaaq stone hearth	1910 ± 40	Willow charcoal	Esdale
Napaaq stone hearth	1877 ± 57	Willow charcoal	Esdale
Napaaq stone hearth	1940 ± 57	Willow charcoal	Esdale
Napaaq obsidian area	4001 ± 57	Willow charcoal	Esdale
Napaaq obsidian area	4095 ± 59	Willow charcoal	Esdale
Napaaq obsidian area	4980 ± 42	Birch charcoal	Esdale
Napaaq obsidian area	8240 ± 50	Alder charcoal	Esdale

This radiocarbon date table contains all of the existing dates from Tuktu-Naiyuk localities. Campbell's dates are from Gal 1982. Beta Analytic and University of Arizona Radiocarbon Lab produced the dates on charcoal excavated by Esdale and Young in 2004.





National Park Service photograph

Students gather around to show off some of their most interesting finds of the summer (points and scraping tools). From left to right: Diane Sikvayugak, Natasha Slobodina, Aminilla Hugo, Billy Aghook, Terence Booshu, and Brandon Rummer.



Photograph courtesy of Eric Hart

Jeff Rasic (NPS-YUGA) demonstrates to students at the Nunamiut School in Anaktuvuk Pass how stone tools are made. After he finished flint knapping, the students leaned in to take a closer look at the replicated artifacts. The tools on the canvas are all made from obsidian.

***The ancient hunter-gatherers primarily used chert as a raw material, but also used obsidian and rare quartz crystal to make notched points and scrapers. People repaired hafted tools, threw out broken and used-up dart points, scraped hides and prepared meals.***

drawing different types of artifacts.

Analysis of the spatial data recorded during excavation showed that each separate artifact cluster (i.e. Napaaqtualuit obsidian notched point area, Uyagaluk, L-2) told its own story. Forty-four notched points made from obsidian, chert and quartz crystal were found across the Tuktu-Naiyuk terrace. In one cluster, points were being resharpened and broken points were removed from hafts, while in another cluster notched points were being knapped from large flakes. Furthermore, the points in one cluster dated a thousand years older than the points in another, suggesting that these activities took place several generations apart. In another area of the site, scraping tools were found in abundance (43 were excavated in total at Tuktu-Naiyuk). Instead of repairing projectile points, the emphasis was on hide working.

The class also participated in an experiment designed to explain the principles behind radiocarbon dating organic materials such as charcoal, wood and bone. Finally, our work was summarized in a poster prepared by the students which was made available to view at the Alaska Anthropology Association meetings in 2005 and also displayed at the Nunamiut School. At present, artifacts from the 2004 excavations at Tuktu-Naiyuk are on loan to the NPS by the Arctic Slope Regional Corporation. They will be sent back to Anaktuvuk Pass to be stored and displayed at the Simon Paneak Museum when this facility is able to allocate space and curatorial resources.

## Conclusions

The 2004 excavations at Tuktu-Naiyuk answered several questions that had been left unanswered by Jack Campbell's 1960s research. We discovered that people used the site for several thousand years, from over 5,000 years ago to recent times. Ancient hunters used different parts of the Tuktu-Naiyuk terrace at each visit, and the artifacts they left behind recorded specific activities that took place (Binford 1978). The ancient hunter-gatherers primarily used chert as a raw material, but also used obsidian and rare quartz crystal to make notched points and scrapers. People repaired hafted tools, threw out broken and used-up dart points, scraped hides and prepared meals. We can't tell from the flaking debris and charcoal, but we can guess that they also watched for caribou, socialized, told stories, and cared for their children (Campbell 1998, 2004).

The students taking part in this investigation learned how western scientific methods can be used to decipher ages of site occupation and reconstruct campsites or ancient technologies. At the same time the students taught the archeologists how to balance a sterile analytical approach ("locality L-2") with a light hearted, personal approach that was closely tied to the culture of the people we were studying (they gave Inupiaq nicknames to everyone, place names to site localities, and taught us Inupiaq terms for items in excavations and around camp).

## Acknowledgements

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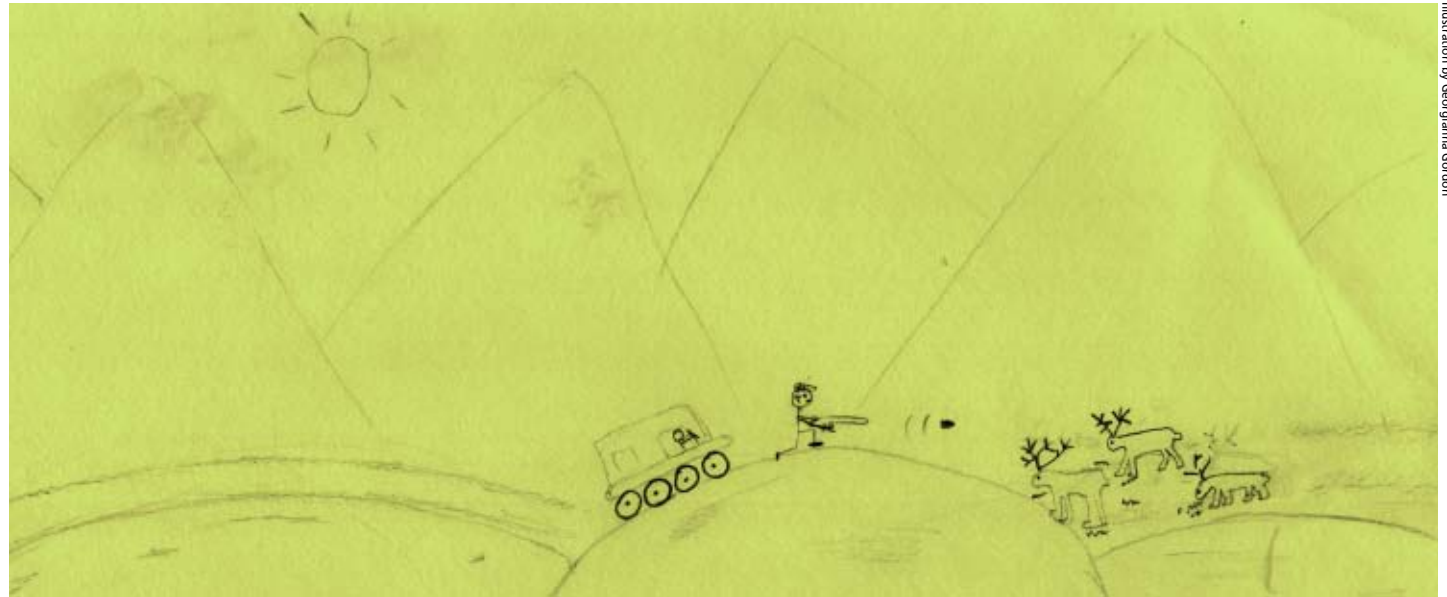


Illustration by Georgianna Gordon

A Nunamiut high school student interprets a hunt and kill site at Tuktu-Naiyuk using a modern perspective.

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